Power quality analyser Alptec 2333b

Installation Note
Included: First steps with the *WINALP2400* software

CE

ALPES TECHNOLOGIES

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Summary

1 About this Document 6
1.1. Document structure 6
1.2. Signs and symbols 6

2 General Safety Instructions 7

3 General dimension 9
3.1. Overall dimensions 9
3.2. Size of the voltage wires : 10
3.3. size of the current wire : 10

4 General safety instruction 11

5 Design and functions 12
5.1. Terminals 12
5.2. Display and control information 13
5.3. Switches 14
5.4. Factory settings 15

6 Start-up the device 16
6.1. Checking of delivery 16
6.2. ALPTEC2333B 16
6.3. Checking the connections 17
6.4. Supply of the internal battery 17
6.5. Wiring the analyzer for three-phase measurement 18
6.6. Single-phase measurement 19
6.7. Three-phase measurement 19
6.8. VT measurement: 19
6.9. Wiring of communication ports 20
6.10. Powering up the analyzer 21
6.11. Installation 22

7 First step with the software 23
7.1. Required hardware 23
7.2. Software installation (CD-ROM) 23
7.3. Launching the software 23
7.4. Choose the good langage 23
7.5. Wizard 24
7.6. Menu description : 25
The different possibilities 25
List of the templates 26
7.7. Icons' description 27
7.8. Measuring points management 28
New measuring point: 28
Setup of a measuring point: 29
Check the wirings : 31
7.9. Download the data 33
Manual download for a measuring point 33
Automatic download for several measuring points 34
Launch the download server 35

8 Data analysis 36
8.1. Events 36
8.2. Quality counters 40

8.3. RMS measurements 43
8.4. Graphical help to select the measurement 45

9 Transport and Storage 48
9.1. Transport 48
9.2. Storage 48

10 Warranty 48

11 Recalibration 48

12 Maintenance 49
12.1. Internal items replacement 49
12.2. Status messages 49
12.3. Battery replacement 50
12.4. Cleaning 50

13 Decommissioning and Disposal 51
13.1. Shutting down 51
13.2. Recycling and disposal 51

14 General technical data 52

15 Definitions 54

1 About this Document

1.1. Document structure

This document consists of several chapters. Within these chapters, shoulder headings in the margin identify sections in the text focussing on the respective topic or procedure. Example:

"View details"

The text belonging to this shoulder heading informs you on how the details of a measured value can be viewed, including introductory notes, safety instructions, hints and tips, instructions on procedures, figures and tables, if any.

1.2. Signs and symbols

The following signs and symbols are used in this document:

Symbols

Symbol	Description
☑ ...	... identifies a requirement. This requirement must be met before you can proceed with the task described in this section of the text.
▸ ...	... identifies a mandatory action. You are requested to carry out a specified task.
▸ ... – or – ▸ ...	... identifies a mandatory action to which there is an alternative procedure. The alternative procedure is introduced with "– or –" or by a left indent.
	... identifies general information and hints. In the related section of the text, you find important information regarding a certain system feature or procedure.
	... ... identifies important information. The related information and instructions must always be strictly followed.
	... identifies a warning relating to a risk to life and limb from electric shock. If the instructions are not strictly adhered to, there is an inevitable risk to life and limb.
	... ... identifies a warning relating to a potential risk or dangerous situation. If the instructions are not adhered to, there is a risk of death, injury or damage to property.

Text formats

Format	Description
Detail	Names of software and operating elements, lettering on the device as well as numbers and text shown on the display are printed in *italics*.

2 General Safety Instructions

The design and manufacture of this device conform to the latest state of technology and the safety standards lay down in IEC 61010-1/ 2nd edition. If used improperly, there is a risk of damage to persons and property.

Protection class

- Class III

Qualified people

- The device may only be operated by suitably qualified personnel.
- For the purpose of these instructions, all persons who are familiar with the installation, assembly, connection, inspection of connections and operation of the analyzer and who have completed training in at least one of the following areas:

➔switching on/off, enabling, earthing and identification of electrical circuits and devices/systems according to the applicable safety standards;
➔ maintenance and operation of appropriate safety gear, in accordance with the applicable safety standards;
➔ first aid.

Safe operation

- Ensure that all persons using the device have read and fully understood the operating manual and safety instructions.
- The device may only be used under certain ambient conditions. Ensure that the actual ambient conditions conform to the admissible conditions laid down in chapter "8.5".
- During operation, ensure that the cooling vents (if exist) are not obstructed in order to prevent heat accumulation inside the housing.
- Always comply with the instructions in chapter "3".
- Prior ton any manipulation of the device, shut off all the electrical sources connected to the device.

Proper use

- Do not use the device for any other purpose than the measuring of voltages and currents that are within the measuring ranges and categories, including voltage to earth, laid down in chapter "3". Improper use shall void all warranty.

Electrical connections

- Ensure that the power and connecting cables as well as all accessories used in conjunction with the device are in proper working order and clean.
- Ensure that the protective earth connector of the power lead is connected according to the instructions to the low-resistance unit earth cable.
- Install the device in such a way that its power cable is accessible at all times and can easily be disconnected.
- For connection work, do not work on your own but in teams of at least two persons.
- Do not use the device, if the housing or an operating element is damaged.

Risks during operation

- Ensure that the connected devices work properly.
- In the case of a direct connection to current circuits (without transformer or shunt), ensure that the circuit is protected to max 16 A.

Maintenance and repairs

- Do not open the housing. Do not carry out any repairs and do not replace any component parts of the device.
- Damaged connecting and power leads must be repaired or replaced by an authorised service technician.
- Damaged or defective devices may only be repaired by authorised specialised technicians.

Accessories

- Only use the accessories supplied with the device or specifically available as optional equipment for your model.
- Ensure that any third-party accessories used in conjunction with the device conform to the IEC 61010-2-031/-032 standard and are suitable for the respective measuring voltage range.

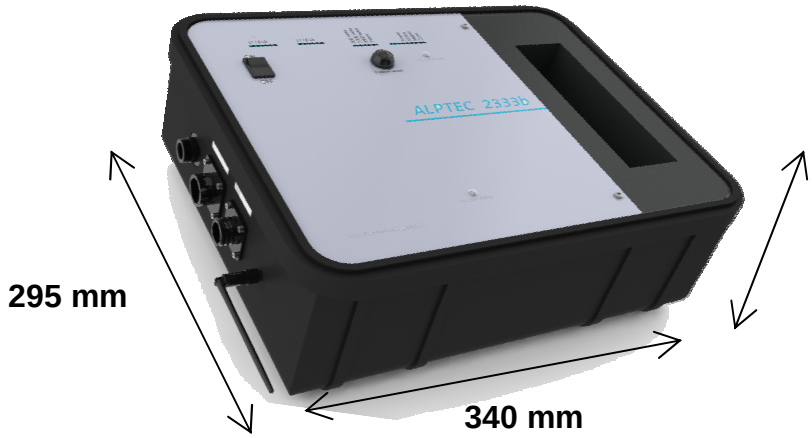
Shutting down

- If you detect any damage to the housing, controls, power cable, connecting leads or connected devices, immediately disconnect the unit from the power supply.

If you are in doubt as regards the safe operation of the device, immediately shut down the unit and the respective accessories, secure them against inadvertent switching on and bring them to an authorised service agent.

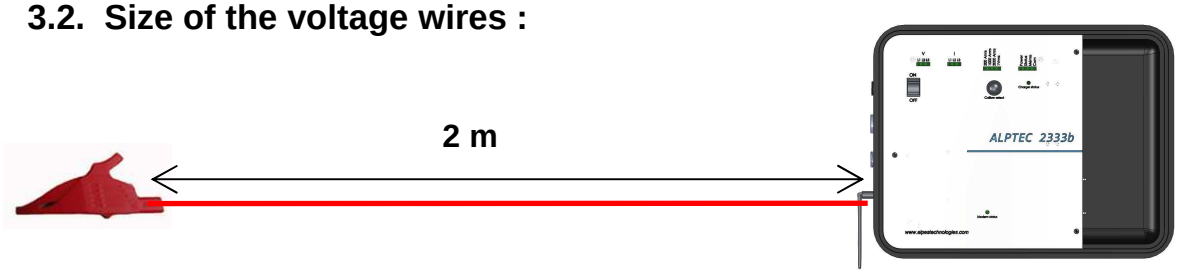
3 General dimension

3.1. Overall dimensions

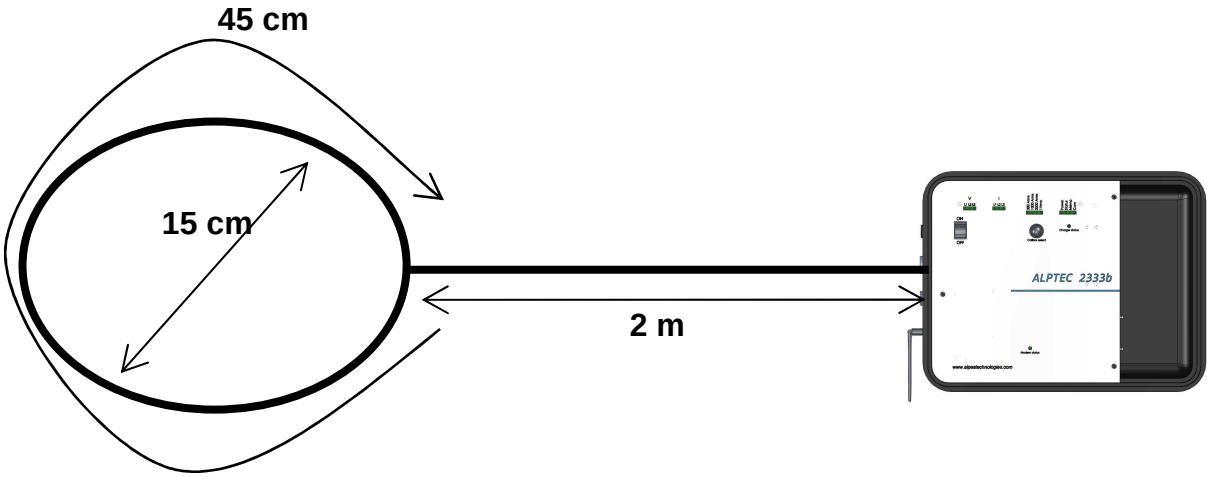


Weight 4.8 kg.

3.2. Size of the voltage wires :



3.3. size of the current wire :



4 General safety instruction

Power supply

- The power supply level shall be inside the limit indicated on the box and the indication below :

Type:	ALPTEC2333B
Power Supply :	L_1L_2 : 210-600Vac / L_1N :120-345 Vac
Frequency:	50Hz
Protection class:	IP54
MEASUREMENT:	
Nominal Voltage:	3 x 230V
Voltage precision:	0.1%
Nominal current :	3 Input / Depends of the range selected (300A 100A 3000A)
Current precision:	1 %

Power supply from battery

The battery charge begins automatically when the power is on.
When the power shut down, the battery will automatically power the device for 1 hour mini.

Input voltage

The maximum input voltage to earth (⏚) may not exceed 600V CATIII.

Input current

The input current depends on the transducer. The range is from 300A to 3000A.

Servicing and maintenance

- Do not remove the cover.
- Refer servicing to qualified personnel.

CE

Conformity mark re. EC Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC.

Protection class

IP 54

5 Design and functions

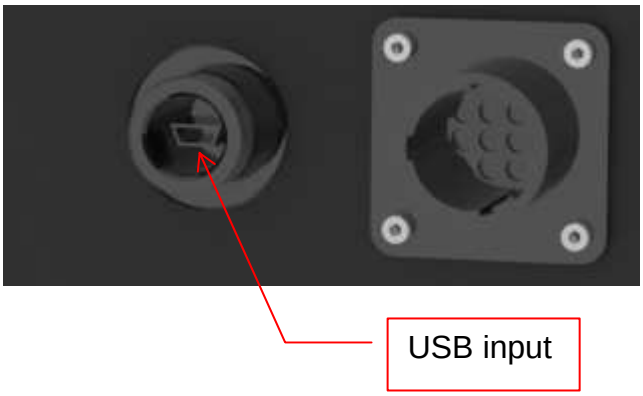
This chapter provides an overview of the terminals, communication ports and interfaces of this instrument, as well as a list of display and operating devices and a brief introduction to the basic functions of the unit.

5.1. Terminals

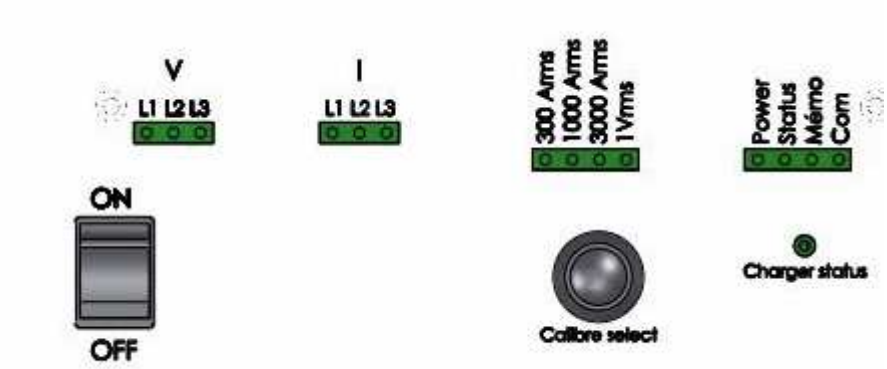
Mini USB plug :

This connector shall be mini USB plug Type A on one side and USB Type B on the other side.

Warning:
Disconnect USB before the power ON.
If the connector is plugged when the device is started, disconnect the USB plug at the PC side.



5.2. Display and control information



The different Leds (Power, Status, Mem and Com) enable to know the status of the ALPTEC2333B

Led Power :

The Led Power is green when the device is “On”. When the device is « off » all the leds are shut down.

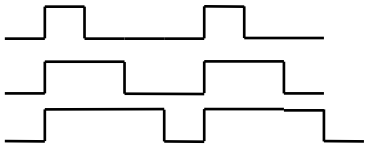
Led Status :

The led « Status » shall blink orange when the ALPTEC2333B is on and not connected to a periodic signal (frequency ~ 50 Hz), the color changes in green when the ALPTEC2333b is connected at one periodic signal (it is the PLL), frequency of the signal shall be near 50 Hz.

Led Memo :

The led « Memo » is off when there is no recording.
When this led is blinking, the sequence enables to know what is the recording status :

- 25% : recording is scheduled.
- 50% : ALPTEC2333B is recording.
- 75%: recording is finished.

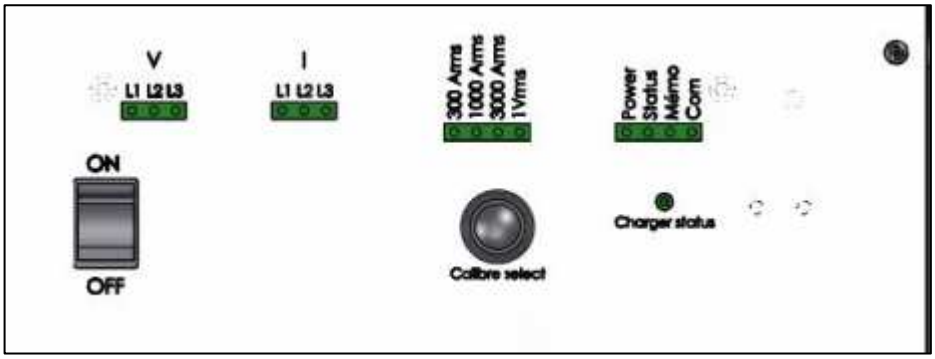


The Led Memo is blinking red when the ALPTEC2333B is erasing the data.

Led Com:

The Led Com is blinking orange when the ALPTEC2333B is communicating through USB.

5.3. Switches



switch 'ON-OFF' :

This switch will start the ALPTEC2333B
In order to charge the battery, this switch shall be « on » and the voltage input shall be connected to a power supply.

Switch 'Calibre select' : (range select)

When this switch is pressed briefly: it will change the range of the current clamp: the corresponding led shall be on.

- In order to start a record: press this switch more than 3s, the range led will be off during one second and after on. The switch shall be relaxed, the ALPTEC2333B will start a recording. This status is verified by the memo led status (see previous chapter)
- It is also possible to stop the recording with the same long pressure on the switch.

- Connection checking : *See chapter **6.3***

5.4. Factory settings

General parameters:
Connexion : star
Nominal voltage: 230 Vrms
Nominal current : 5Arms
Integration time: 10 min
Network frequency: 50 Hz
Voltage transformer ratio: 230/230
Current transformer ratio: 5/5
Delay in the GPS Synchro (h) : 2 h
Voltage hysteresis: 10 %
Current hysteresis: 10 %

- Passwords:
  Administrator password: 00000000
  User 1 password: 00000000
  User 2 password: 00000000

- ower Quality level : EN50160

- Histogramms :
  Voltage: 200 to 250Vrms
  Power factor : 0,5 à 1
  Frequency : 49,5 to 50,5Hz
  Other parameters : automatic mode

- Waveform :
  record is done for U<90%Unom or U>110%Unom

Ripple control:

Parameter	Telecom n°1 (Pulsadis)	Telecom n°2
Filter status	On	On
Applied to inputs:	V1, V2, V3	V1, V2, V3
Storage of the pulses	On	On
Number of pulses	40	50
Frequency (Hz)	175	188
Bandwidth (Hz)	5	5
Max level low status	0,6	0,6
Min level high status	0,9	0,9
Width of the high status of the first pulse (s)	1	2
Width of the low status of the first pulse (s)	2,75	1
Width of the high status of the next pulses (s)	1	0,5
Width of the low status of the next pulses (s)	1,5	0,5

6 Start-up the device

6.1. Checking of delivery

- Prior to work with the device, check the delivery to ensure that it is complete, using the following list and the delivery specifications:

6.2. ALPTEC2333B

1 Power Quality analyzer ALPTEC2333B
1 bag with :
* 1 USB cable.
* 1 measurement cable “**TRI**” for Phase to Phase measurement (input L1,L2,L3, ground and neutral measure)
* 1 measurement cable “**POWER**” for phase – neutral measurement (input Phase Earth Neutral with one plug) ; This cable should be used for charging the device.
* 1 measurement cable for “**VT**” (input L1,L2,L3 and neutral measure and the input from the power supply plug for a separated power supply)
* 1 current cable “**CURRENT**” with 3 rogowsky coils
* 1 calibration certificat
*.The user manual.
* 1 CD-ROM « WINALP2400 »

6.3. Checking the connections

After connecting the voltage measurement (L1, L2, L3 and three-phase neutral) and current measurement (I1, I2 and I3) cables to the analyzer, the LEDs can be used to check the order of the phases:

Voltage LEDs:
If the voltage LEDs L1, L2 and L3 flash in this order and at regular intervals, the voltage inputs have been connected correctly.
If the LEDs flash in a different order or flash erratically, the phases are inverted. Analysing how the LEDs flash can help determining which phase is not connected correctly.

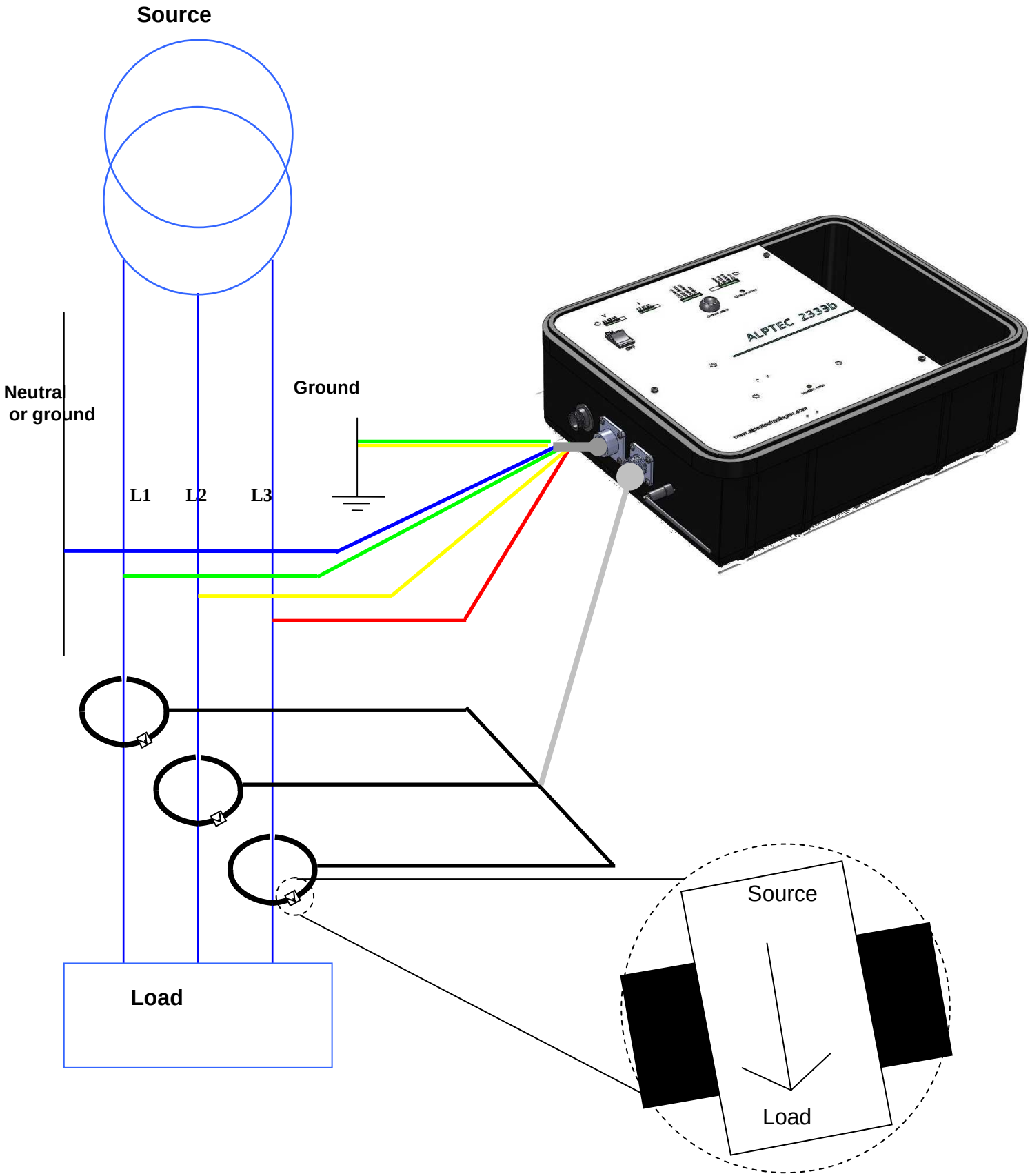
Current LEDs:
In the same way, the current LEDs L1, L2 and L3 should flash in this order and at regular intervals.

6.4. Supply of the internal battery

Battery:

The instrument is equipped with one internal battery
For the first use of the instrument, the battery must been duly charged.
The charge of the battery is starting as soon as the instrument is supplied through the voltage input. The instrument will indiquate the charger status as described below :
Just after starting, the Led "Charger Status" is during all the charging period, then the led will turn into green at the end of the charging process (~3h).
If the device is not connected to a voltage supply, the led is green.
If the led "Charger Status" is not lighted up :
Switch off the instrument.
Check with a well calibrated multimeter if the supply source is ok.

6.5. Wiring the analyzer for three-phase measurement



Power supply/measurements:

The analyzer is powered by specific inputs ("Alim_A" – "Alim_B"). The "**POWER**" single-phase or "**TRI**" three-phase measurement cables have internal bridges enabling the analyzer to be powered from the measurement inputs.

Warning:

The voltages on inputs L_1, L_2 and L_3 must not exceed 600 V rms.

The voltage between L_1 and Measurement neutral must not exceed **345 V rms**.

The voltage between L_1 and L_2 or L_2 and L_3 or L_3 and L_1 must not exceed **600V rms**.

The voltage between The Alim_A and Alim_B inputs must not exceed **345 V rms**.

6.6. Single-phase measurement

The cable must have 4 internal bridges:

Use the designated cable provided "**POWER**"

6.7. Three-phase measurement

The cable must have two internal bridges:

Use the designated cable provided "**TRI**"

For correct measurements, the Measurement neutral input must be connected to neutral or earth.

6.8. VT measurement:

For use behind high voltage transformer (VT) in substation:
Measurement input and supply of the device (dedicated 230V plug) are separated.

Use the designated cable provided "**VT**"

6.9. Wiring of communication ports

To establish communication between a local or remote PC and the analyzer, the appropriate communication port and cable must be used.

USB point-to-point ☑ The FT232BM driver, provided on the WINALP2400 CD-ROM, will be automatically installed on the PC during the installation of your software Winalp2400. If it has not been installed, check if FTDI product was not already installed for a previous application. If yes, install the usb driver manually.
The link is a USB 1.1 connection.

6.10. Powering up the analyzer

Power up

- Turn on the analyzer power supply circuit, then the input voltage and current circuits.
- Set the ON – OFF switch on the analyzer to the ON position.

- The green “Power” LED is lit.
- The “Status” LED starts flashing within 30 seconds.

Battery

- The analyzer has a built-in rechargeable battery.
  The battery must be charged when the analyzer is first used.
  Battery charging starts as soon as the analyzer is powered up.
- The “Charger Status” LED is orange throughout charging, and turns green when the battery is fully charged (approx. 3 hours).
- If the analyzer is not connected to a power supply, this LED is green.
- If the “Charger Status” LED does not come on:
  - Turn off the analyzer.
  - Check the wiring between the analyzer and the power supply using a calibrated multimeter.

6.11. Installation

Before cabling the device, be sure to understand correctly the specifications described in this section.

Installation

☑ Follow the safety instructions regarding ambient conditions and location of installation.

☑ Place the device onto a clean and stable surface or mount it to the appropriate DIN rail.

Risk to life and limb from electric shock!

☑ Follow all the instructions of the chapter “”.

☑ Shut off the power supply, Voltages and Currents circuits prior to connect the device.

- Never open the circuit of a current transformer. Always bridge the inputs of the current transformer before connecting or disconnecting the ALPTEC device.
- Never bridge the circuit of a voltage transformer.

☑ In order to ensure safe operation, first connect the device to the power supply circuit.

☑ Connect the voltage measurement circuits, ensuring that the maximum measuring voltage and max. Voltage to earth are not exceeded.

☑ Connect the current measurement circuits, ensuring that the maximum measuring current is not exceeded.

❶ Do not use leads and accessories that do not fulfil the relevant safety standards, as this could lead to serious injury or death from electric shock!

7 First step with the software

7.1. Required hardware

- ☑ Computer (PC)
- ☑ Pentium IV (Minimum)
- ☑ 520 MB RAM (Minimum)
- ☑ Serial port RS232
- ☑ Ethernet Port RJ45
- ☑ 10 GB of free space for the hard disk
- ☑ CDROM Reader (for installation)
- ☑ Microsoft® Windows 98, 2000, NT, XP, VISTA
- ☑ KORTEX Novafax 56000 modem

7.2. Software installation (CD-ROM)

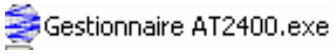
Installation

- From the CD-ROM “WINALP2400 software suite”
- Follow the instructions and enter the registration key which is on the CD jacket.

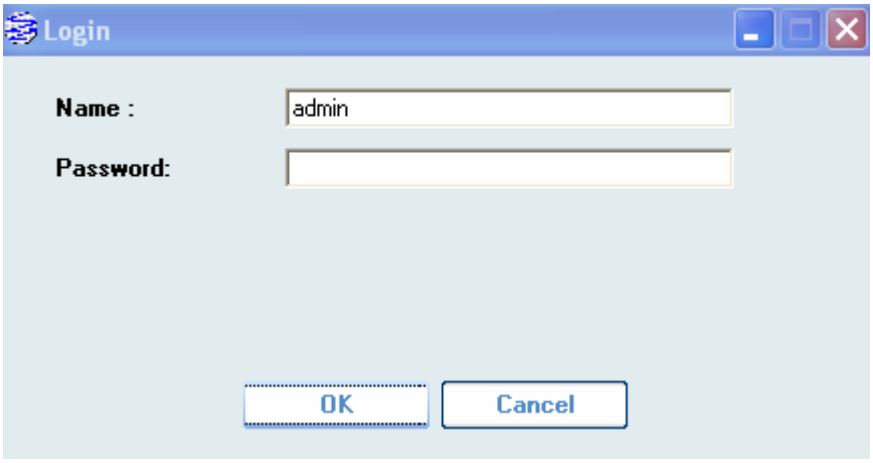
7.3. Launching the software

Login

Click on the shortcut *ALPTEC 2400 manager in the WINALP2400 software suite:*



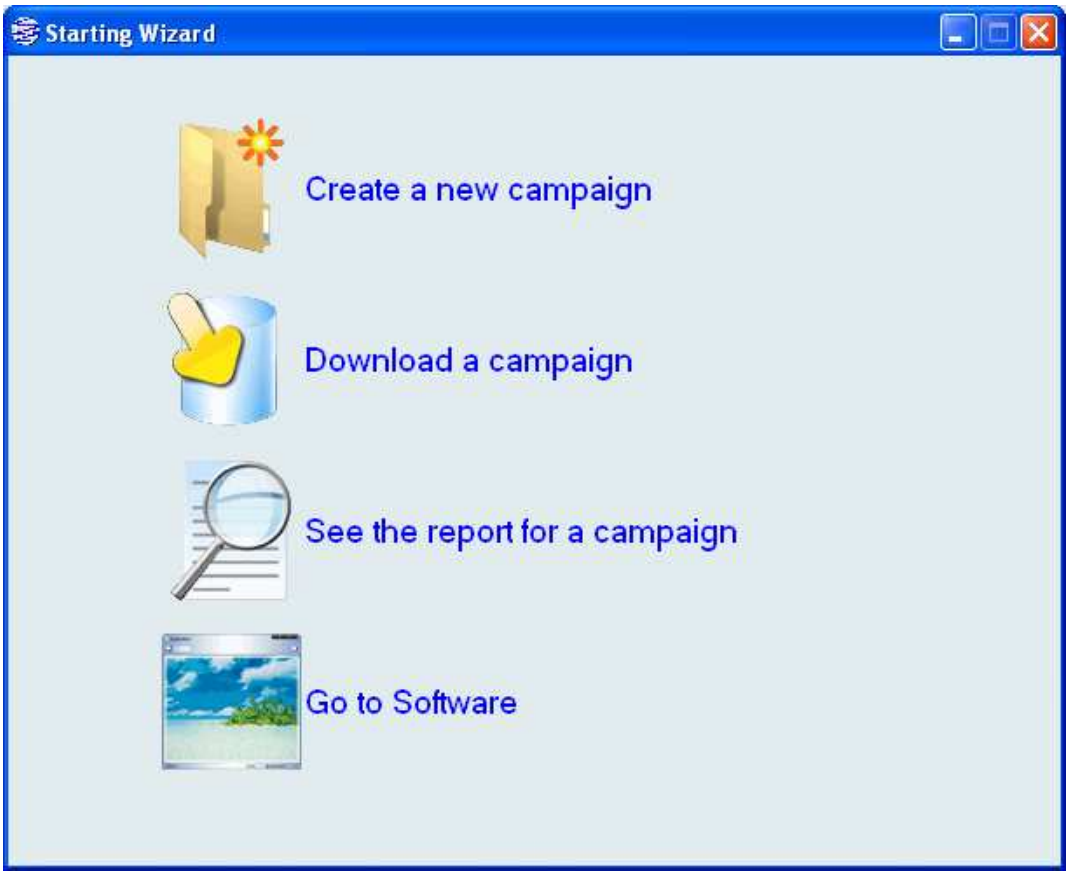
- ❶ the default login is “*admin”*; no password.



7.4. Choose the good langage

- In the toolbar *Outils*, choose *Configuration*.
- Then, choose the good langage and restart the application.

7.5. Wizard



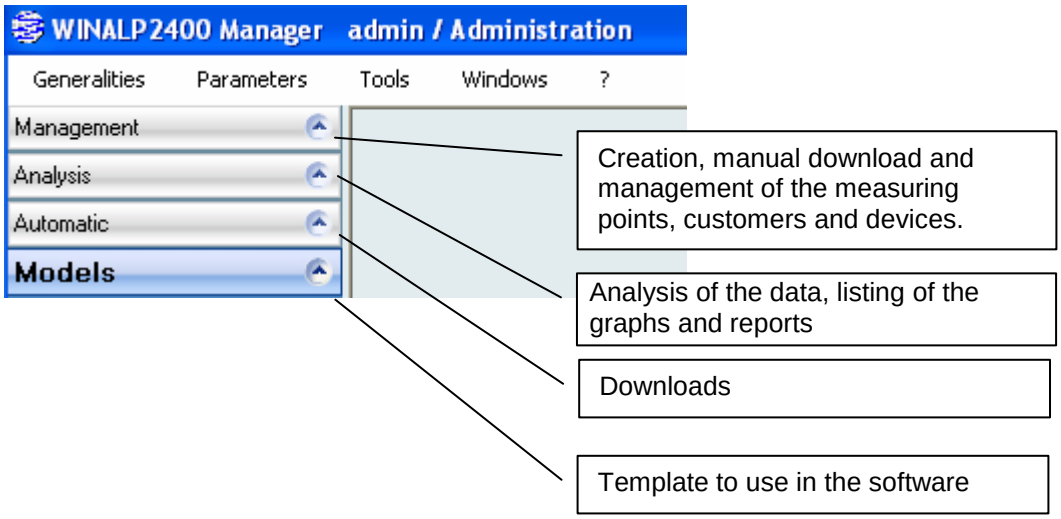
This windows is the first windows who will appears once the program is running

- The easiest way to use the software and the analyser is to follow the indication from this wizard :
  - *Create a new campaign* : will create a campaign with the measuring point associated and a basic configuration
  - *Download a campaign* : the software will download the data from the instrument to the data base
  - *See the report for a campaign* : the software will create an automatic report with the value which were recorded and stored in the data base.
  - *Go to Software* : use this option to use all the functionalities of the software

ⓘ In order to view the windows described at the next chapter, click on *Go to Software.*

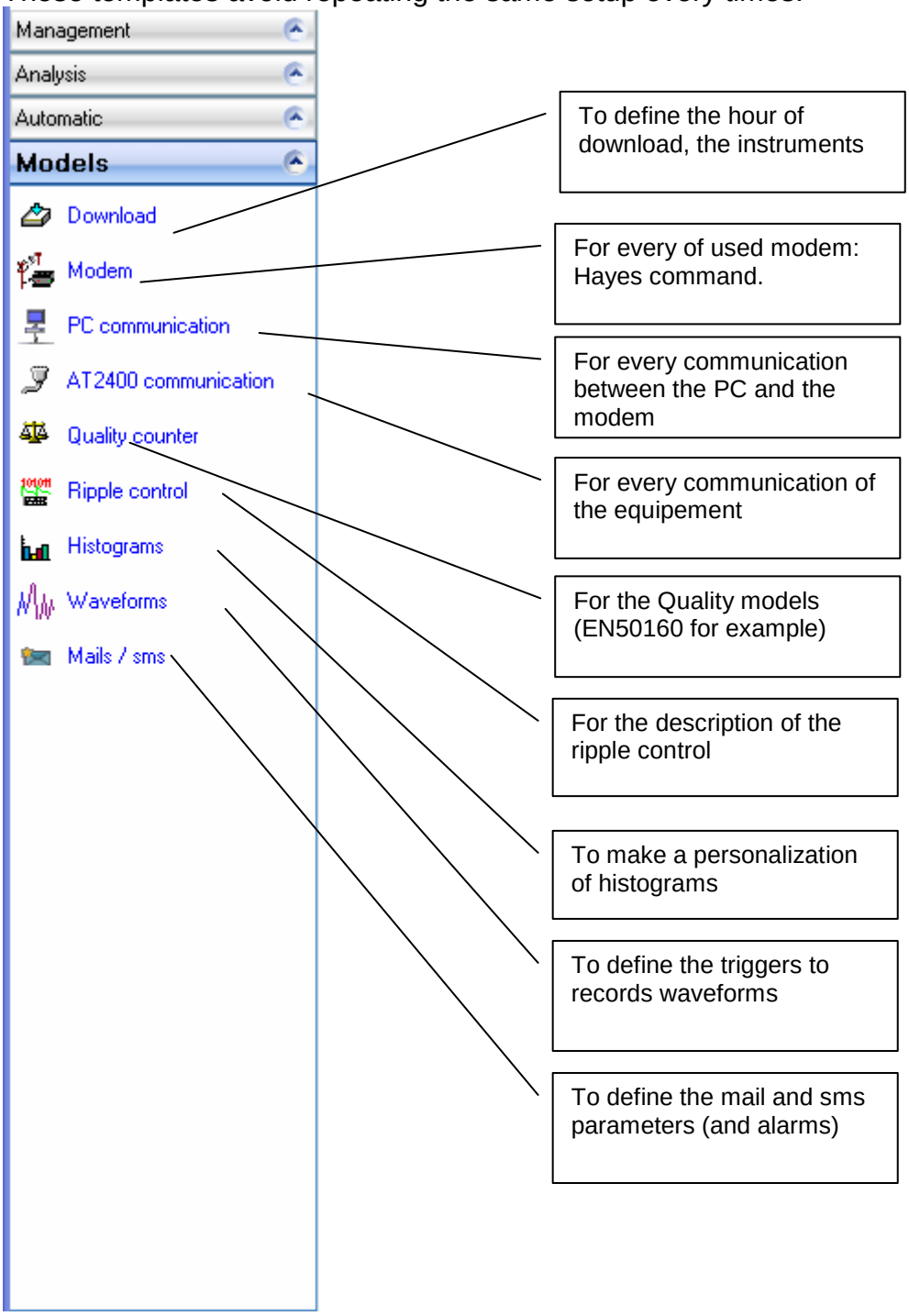
7.6. Menu description :

The different possibilities



List of the templates

These templates avoid repeating the same setup every times.



7.7. Icons' description

The associated function may change with the different windows

Icons

The description of the function:

Common through all the software

add a new form…

Recopy the form

Modify

Delete

display the details

Print preview

Print

Setup

Listing of the setups

Listing of the advanced setup

Real time measurement

Manual download

Reports

7.8. Measuring points management

The measuring point is the area where the ALPTEC is placed for measurements. The data of the measuring point will be downloaded and added in the software date base
Each measuring point MUST be created in WINALP2400 software

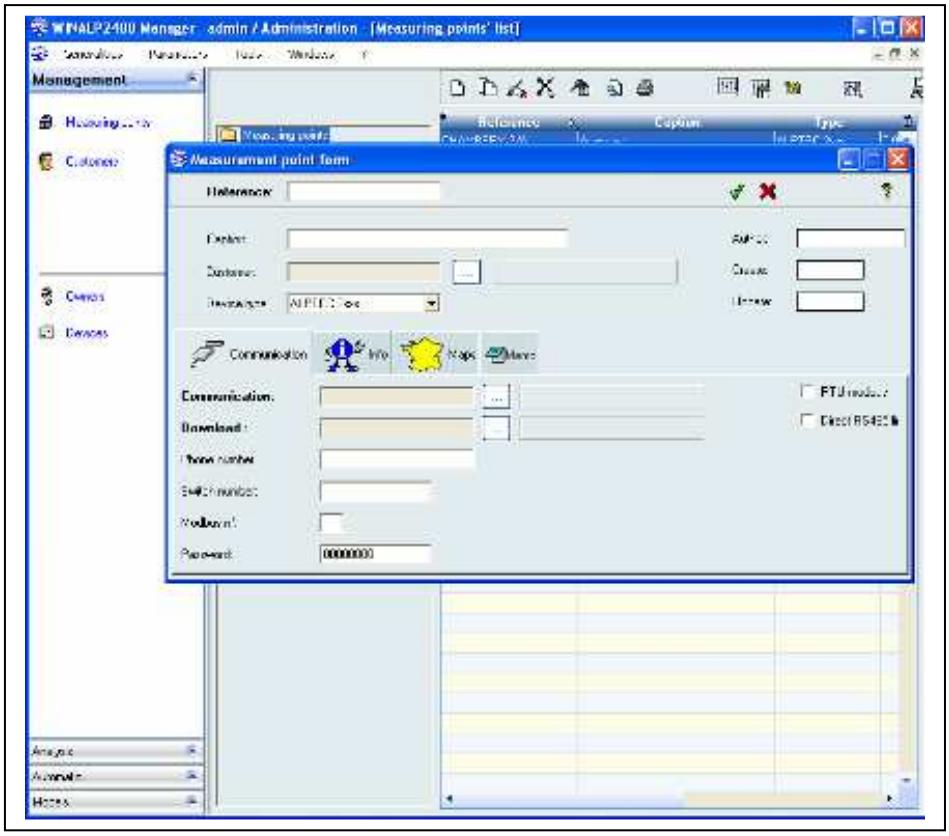
- If the instrument is modified or exchanged, a new instrument is able to be associated to the same measuring point. The data from the new instrument will be added to the old data from the previous instrument. Then it will be possible to have continuity for the analysis.

New measuring point:

Create a new measuring point

The different steps to create a measuring point are described below:

- In the management tab, choose measuring points and the icon : « new »



- Then give a reference (the minimum information requested) and a communication model (how to join the instrument) and a download model (what to download)

- The communication model defines the way to join the instrument and to download the data. Different models are still available in the software :

- Direct (port RS232 direct connection)
  Just fill the port number to use
- Ethernet
  Fill the IP address and the port (usually 2001)
- RTC (with a modem)
  Give the phone number and if required the communication switch N° of the measuring point.
- USB
  Fill in the USB port number

- The download model explains what the data to download are. Some models are already available in the software (*Rms 10min* for example will download the data rms 10 minutes).

Setup of a measuring point:

First use only

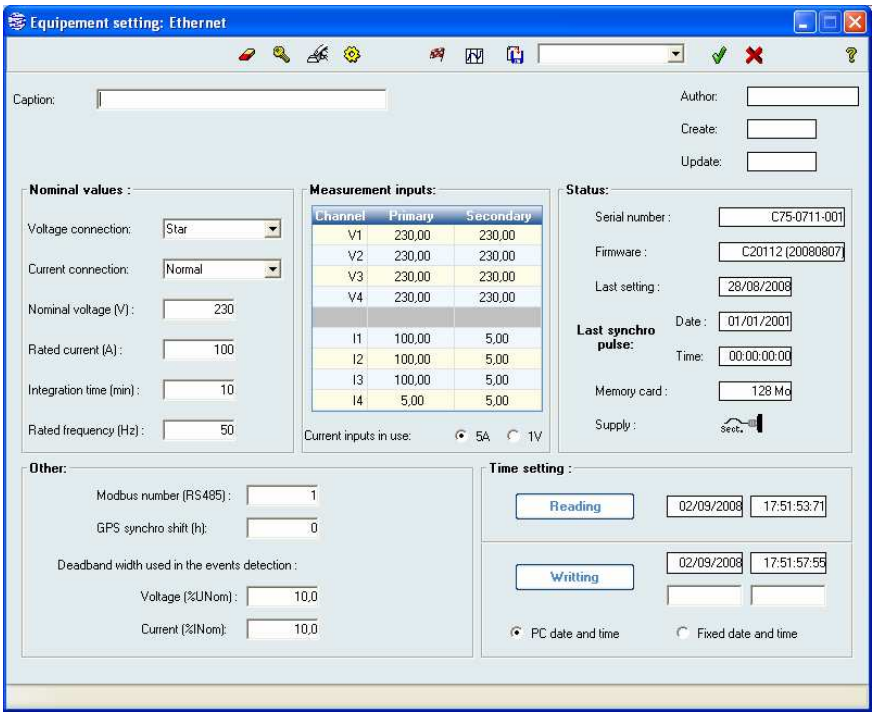
In order to have the correct information it is mandatory to synchronies the setup parameter of the instrument which are in the instrument memory with the matching measuring point in the software data base

Read and write the setup in the instrument

This will be done manually after the creation of a measuring point.

- Underline the measuring point and click on the tool : setup
- The windows with the setup read in the instrument will appear

- The instrument is now declared and ready for a setup. If you validate the windows it will be present in the data base.



- Change the setup if necessary (change the ration for example) and at the end click on the ‘send the configuration’ tool (the flag)

- The instrument is now declared and changes are done inside the calculation board.

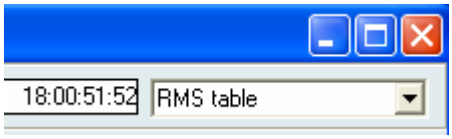
Check the wirings :

With the real time measurement it is possible to check the wirings (direction of the current and phase order).

- Winalp2400 offers different way to display the real time measurements: RMS value, RMS table, Scope meter, symmetrical components.

- in order to see real time display click on the icon

- To change the display, click on STOP

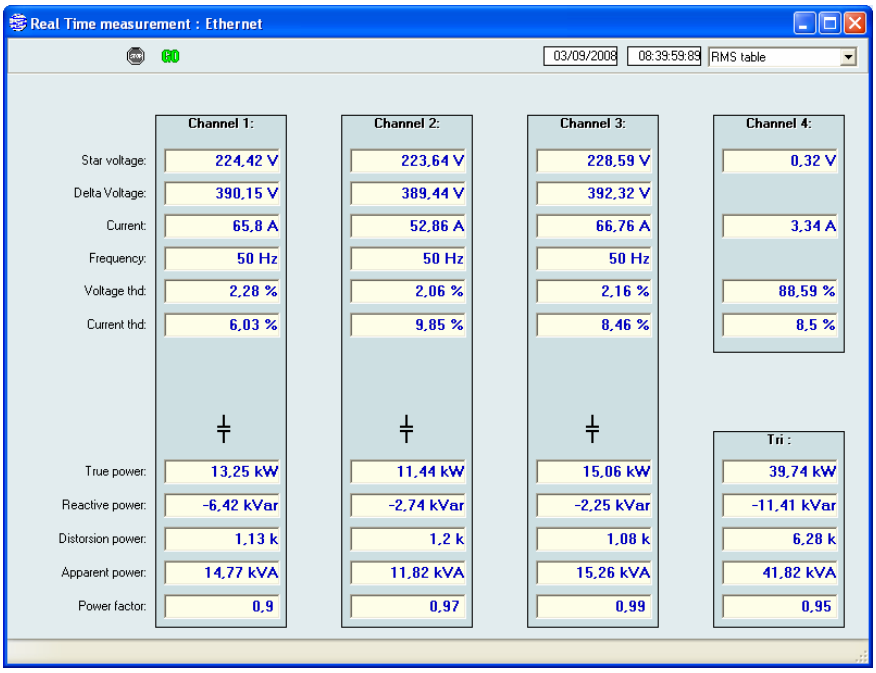


- Choose the requested display
- then read the value with ‘GO’.

- To stop the real time reading click on STOP

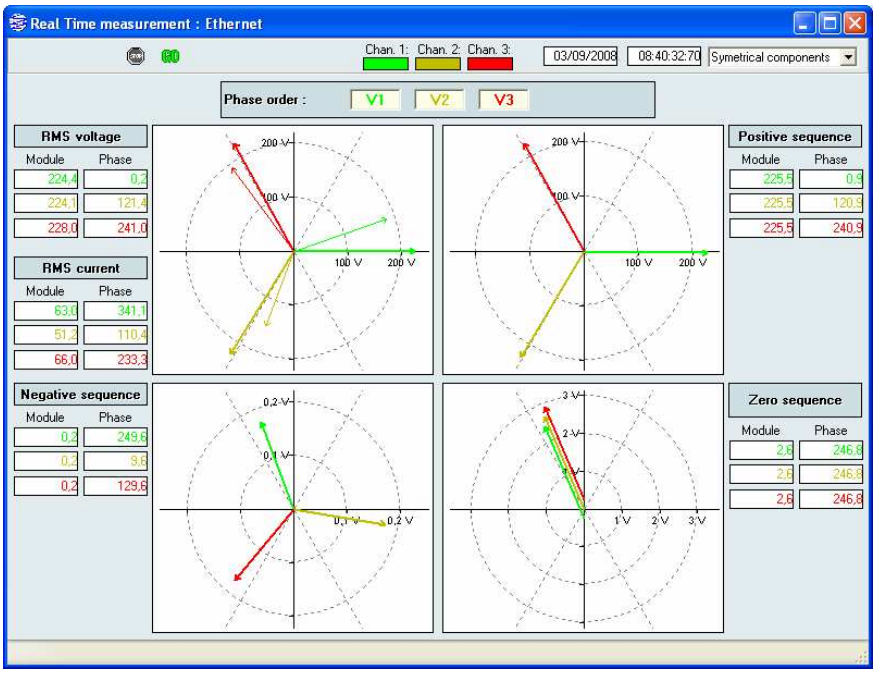
RMS table

This tool offers a summary of all the important values
This will give real time RMS values:



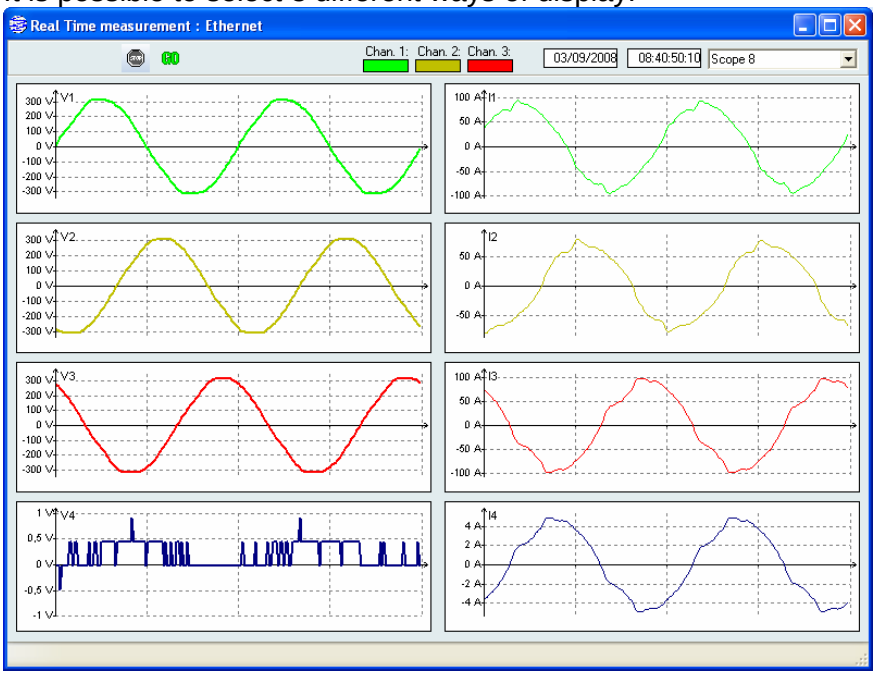
Symmetrical components

This tool is made to check the phase angle and the phase orders
The software displays the 3 voltage phase and the 3 current phase (at the top left windows)



Scope meter

This tool displays the waveform of the voltage and the current as a real scope meter.
It is possible to select 3 different ways of display.



7.9. Download the data

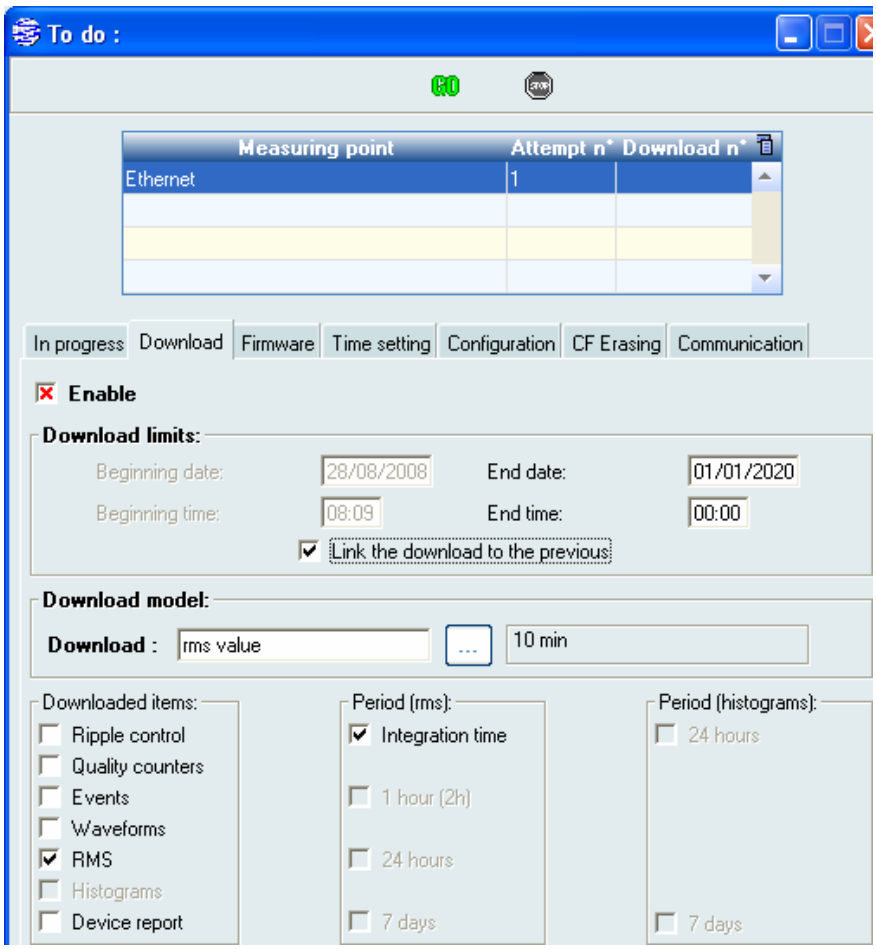
In order to realize the analysis, the data must be downloaded first from the device to the data base computer.
This download will be done between the computer and the instrument with the communication model defined with the measuring point.

- Winalp can use different communication modes : RS232, RS485, USB, Ethernet, modem, modem GSM/GPRS.
- The ALPTEC2333b Analyzer is made for USB communication.

It is possible to launch a manual download whenever it is desired or with a defined schedule and the server software with the automatic download feature.

Manual download for a measuring point

- In the measuring points' list select (underline) the required measuring point.
- Click on the icon *download.*



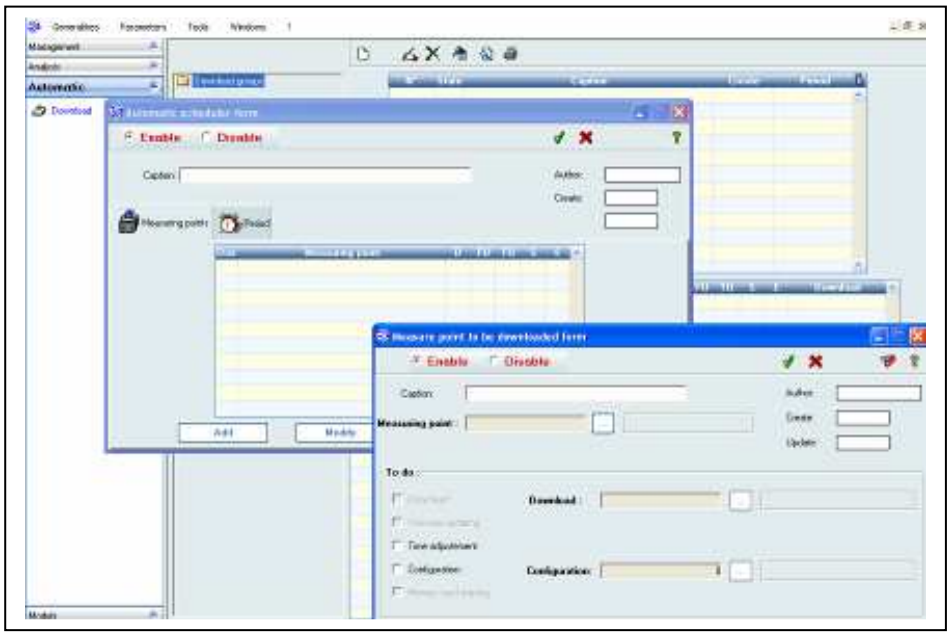
- select the *download* tab, then it is possible to change the download data model. It is also possible to give the date and time
- Click on Go to launch the downloading

Automatic download for several measuring points

This feature enables the automatic download for one or more measuring points with a programmed schedule.

Create a download group In the 'Automatic' menu.
A *download group* is a template with a list of instrument with the associated download template and the assoxiated day, hour of download

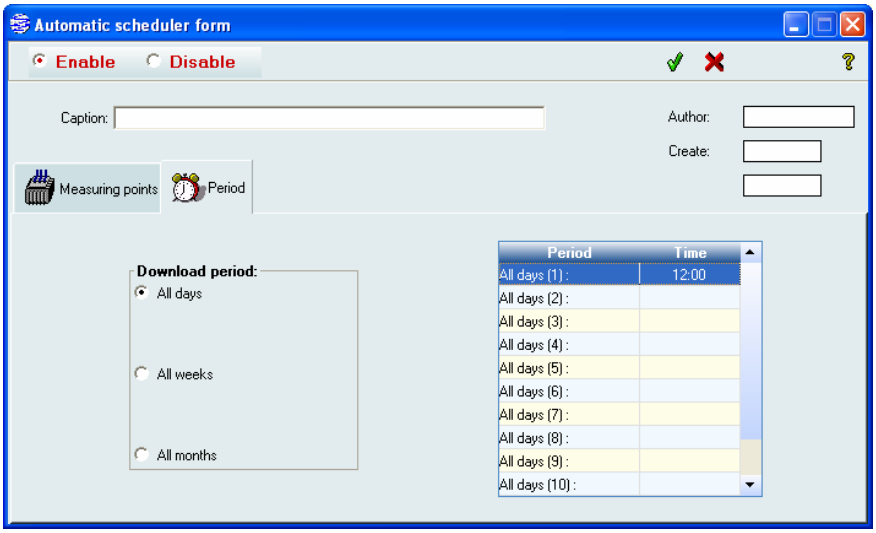
- In the tab *Automatic*, select *Download*.
- Click on *new* in order to create a new group of download.



- Click on *Add* in order to add a measuring point.

- Choose the measuring point and the required action (download, time adjustment,…) and the requested download model.

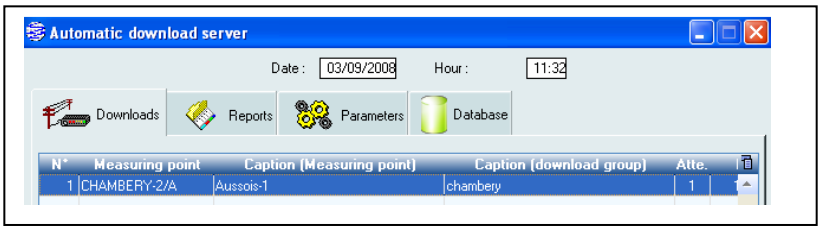
- In the tab *Period*, define a download schedule.



- Give a name (caption) for this automatic download and save it with the validation tool.

Launch the download server

In order to start the automatic tasks, launch the *Download server*. This program as to be considered as a background task and will automatically start the download as they have been scheduled



- It is possible to change some parameters (the refresh time …) in the tab *Parameters*.

8 Data analysis

This manual won't give all the possibilities for the analysis. Below you will find some example.

8.1. Events

One event may be a dip or a swell, an interruption or another magnitudes out of the limit (frequency, harmonic, flicker). This data is associated with its measuring point, its event type, its beginning, its channel, its extrmum and its length.

The different step to display the events are descibed below.

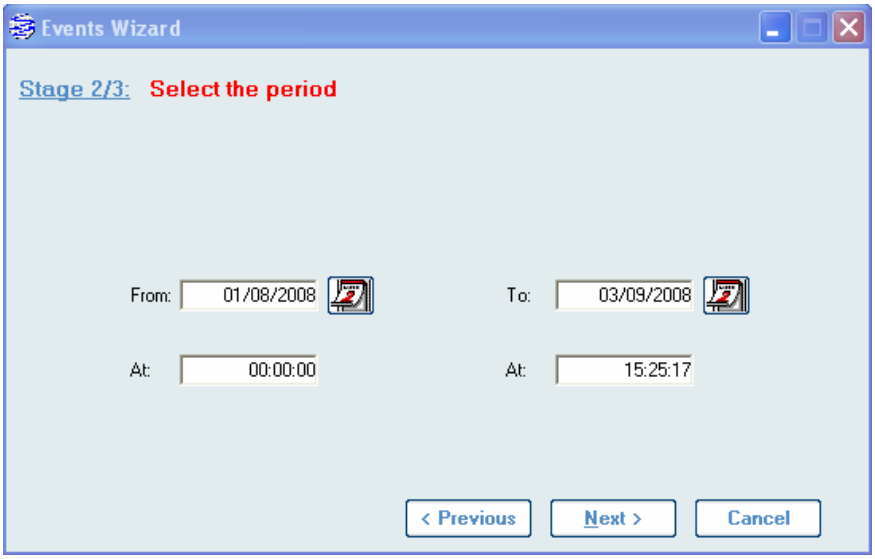
It is as a wizard :

Choose the data

In the analysis tab, choose *Event* and follow the below Steps :

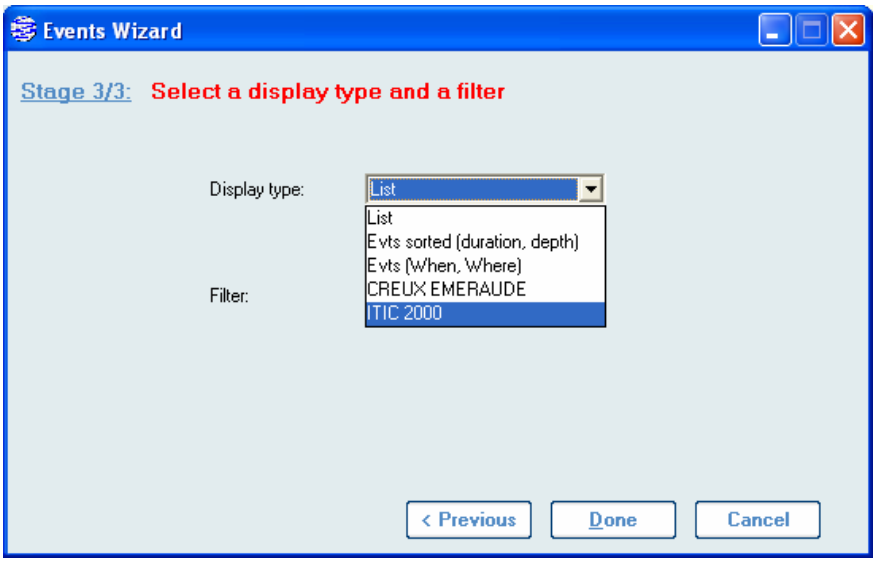
- Select one measuring point (or more)

- Choose a period for the analysis



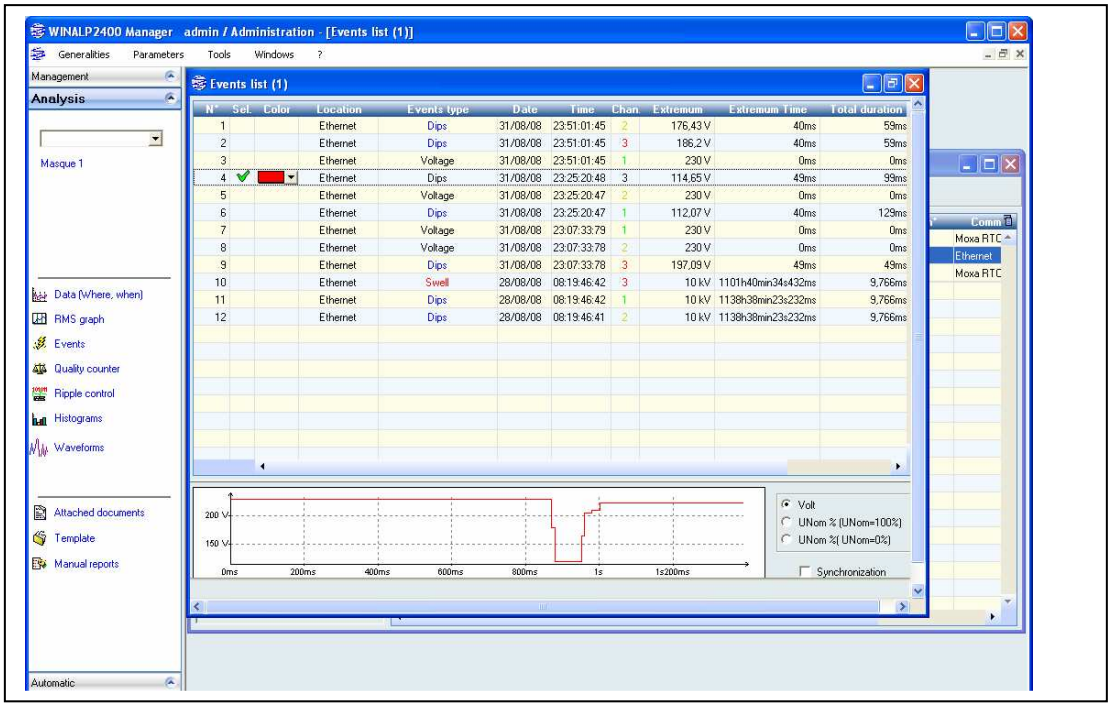
- Choose a way to display the data.

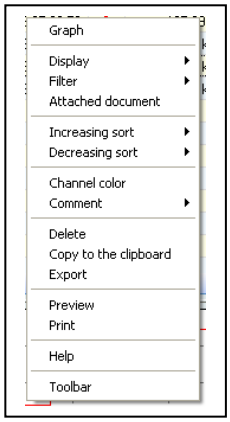
  - The events may be displayed following different way : a table (UNIPEDE), a listing, an ITIC graphs (extremum vs length)



List

- The list option will display a listing of all the event with their main characterization (the measuring point, the event type, the beginning, the channel, the extremum and the length).
- The selected event display the shape on the bottom table.

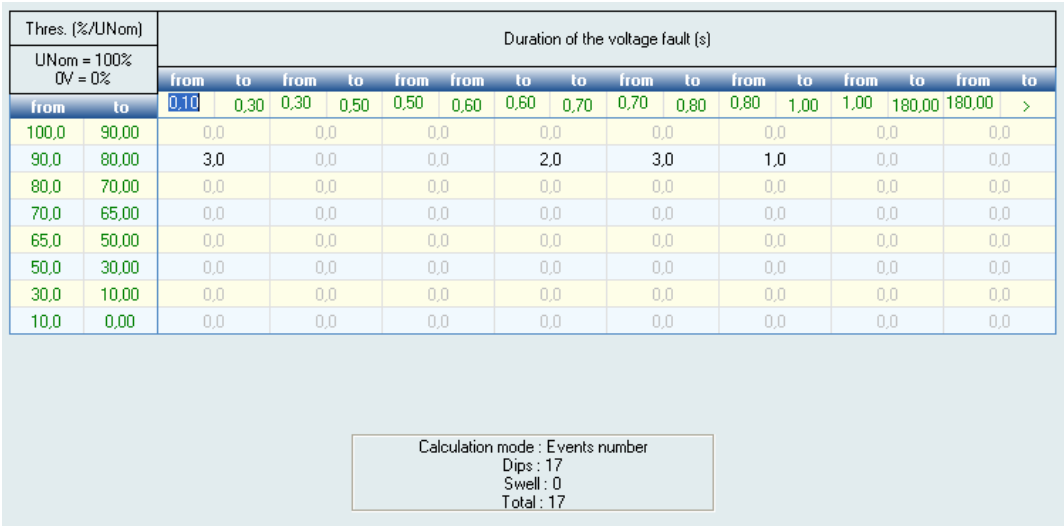




❗ With a right click it is possible to have several options to modify some parameters and some displays.

Table duration /depth

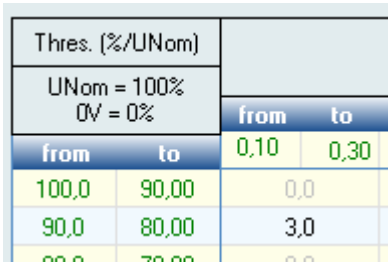
- In the option ‘event sorted’ : every event is classified in an UNIPEDE table. This table only give the number of events for a length and an extremum.



Thres. (%/UNom) UNom = 100% 0V = 0%		Duration of the voltage fault (s)															
		from	to	from	to	from	from	to	to	from	to	from	to	from	to	from	to
from	to	0,10	0,30	0,30	0,50	0,50	0,60	0,60	0,70	0,70	0,80	0,80	1,00	1,00	180,00	180,00	>
100,0	90,00	0,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0	
90,0	80,00	3,0		0,0		0,0		2,0		3,0		1,0		0,0		0,0	
80,0	70,00	0,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0	
70,0	65,00	0,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0	
65,0	50,00	0,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0	
50,0	30,00	0,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0	
30,0	10,00	0,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0	
10,0	0,00	0,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0	

Calculation mode : Events number
Dips : 17
Swell : 0
Total : 17

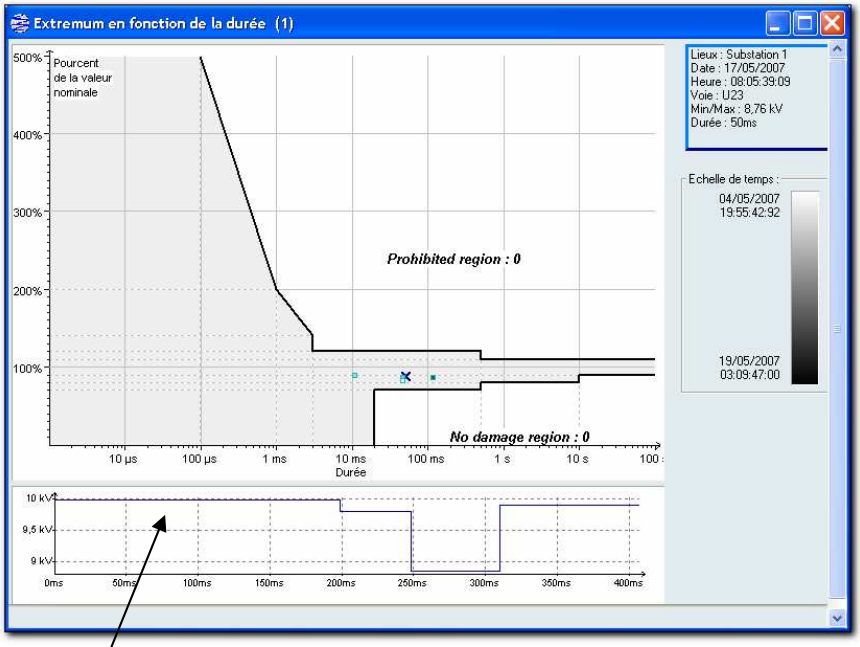
- For example a dip with duration from 0.25 s and an extremum 84,3% from nominal U will be added as « 1 » dip in the case 0.10/0.30 – 90.0/80.0.



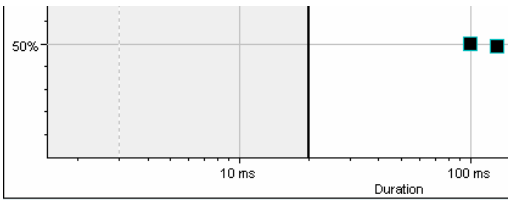
Thres. (%/UNom) UNom = 100% 0V = 0%		from	to
from	to	0,10	0,30
100,0	90,00	0,0	
90,0	80,00	3,0	

ITIC

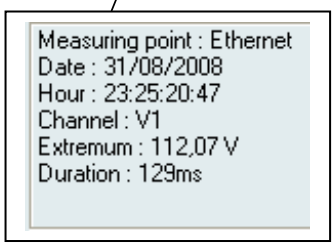
- In the option « ITIC 2000“ every data will be sorted following the duration and the depth and represented by a point in the good abscises and ordonate in the graph :



- For example a dip of 100ms and a depth of 50 % of nominal voltage will be displayed like this :



With the double click on the point, it is possible to display the shape of the event.



- The details of the event which is selected by the mouse is given on the top left of the representation.

8.2. Quality counters

The quality analyzers ALPTEC2444 record a statistical analysis for the quality of the electricity. After the download, the data are sorted for daily, weekly or monthly quality reports. This feature gives a summary for the power quality.

The default thresholds are defined by the EN50160 standards. It is still possible to give your own threshold and to follow your own standards.

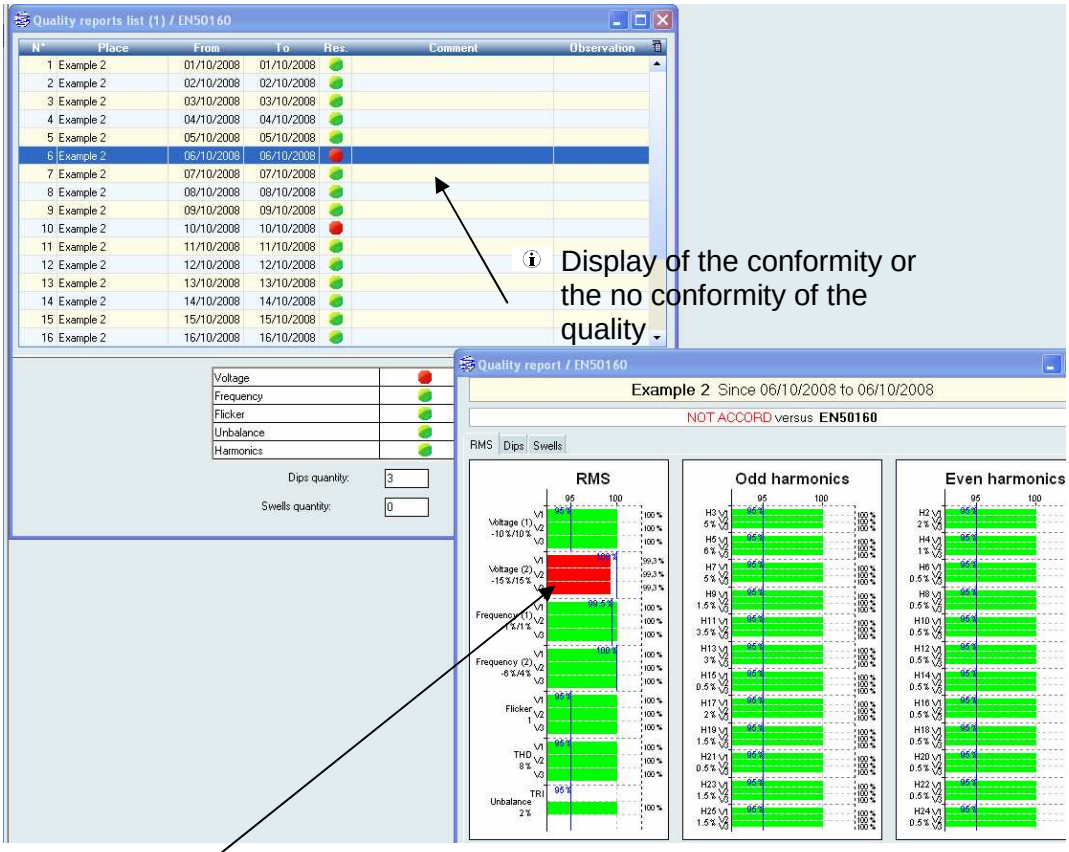
- The conformity request is mostly limited to 95% of the time. For rms voltage and frequency a second threshold is defined for 100% of the time.

In the report the data are sorted by type: rms values, harmonic even and odd.
It is also possible to analyze and to sort the depth and duration table as requested. It will create a DISDIP table.

Choose the data

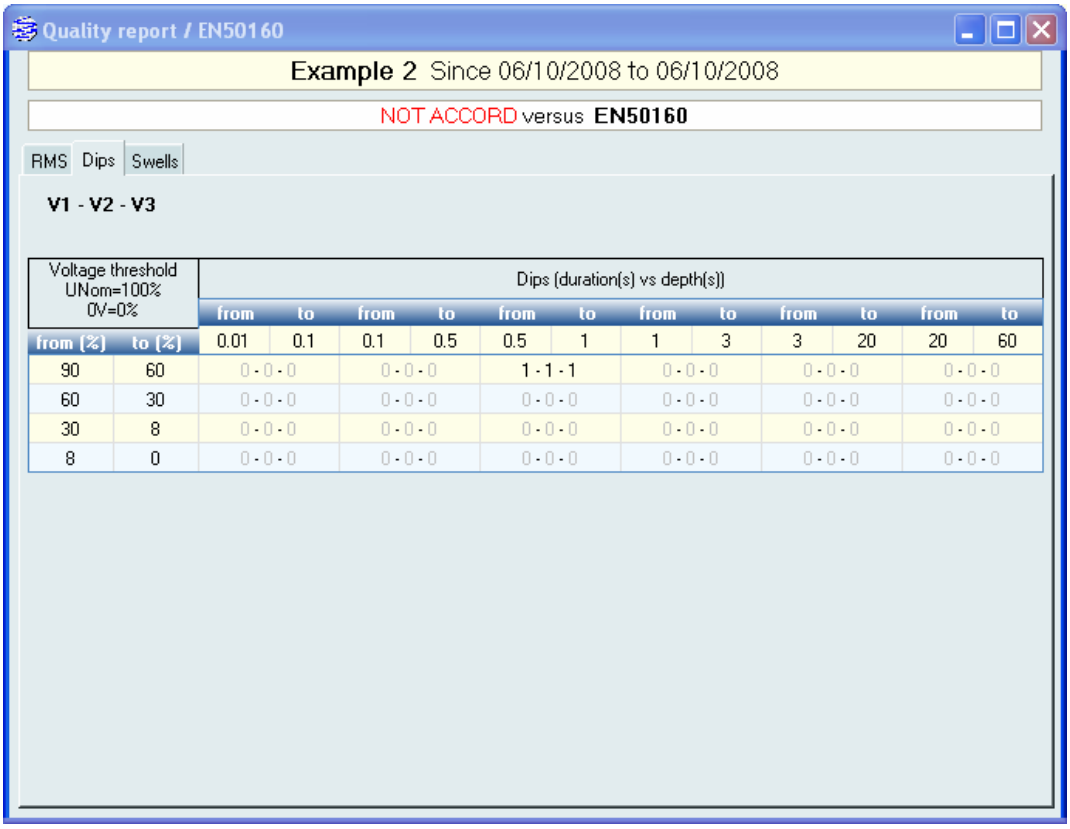
The different step to display the quality counters are described below:

- In the analyze menu, choose *Quality counters*
- Select minimum one point
- Choose an analysis period
- Choose the display mode (listing or graphical)
- Choose an aggregation (daily, weekly, monthly)
- Choose the standard thresholds



% give the % of the total duration (day, week or month) where the voltage was out of the limits.

- It is also possible to display UNIPEDE table :



8.3. RMS measurements

The network analyzers ALPTEC2444 will record ALL the data for different integration period.
The integration period is the period during all the RMS 200msec value (calculated by the analyzer) are integrated.
This give one average RMS value (with corresponding integration period).

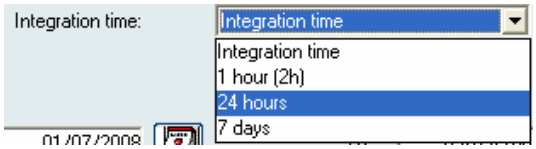
Choose the data

The different steps to display rms values from one or more measuring point are described below:

- In the analysis menu, choose *RMS graph* and follow the steps below:
- Select one or more measuring points.
- Choose an analysis period and an integration period.

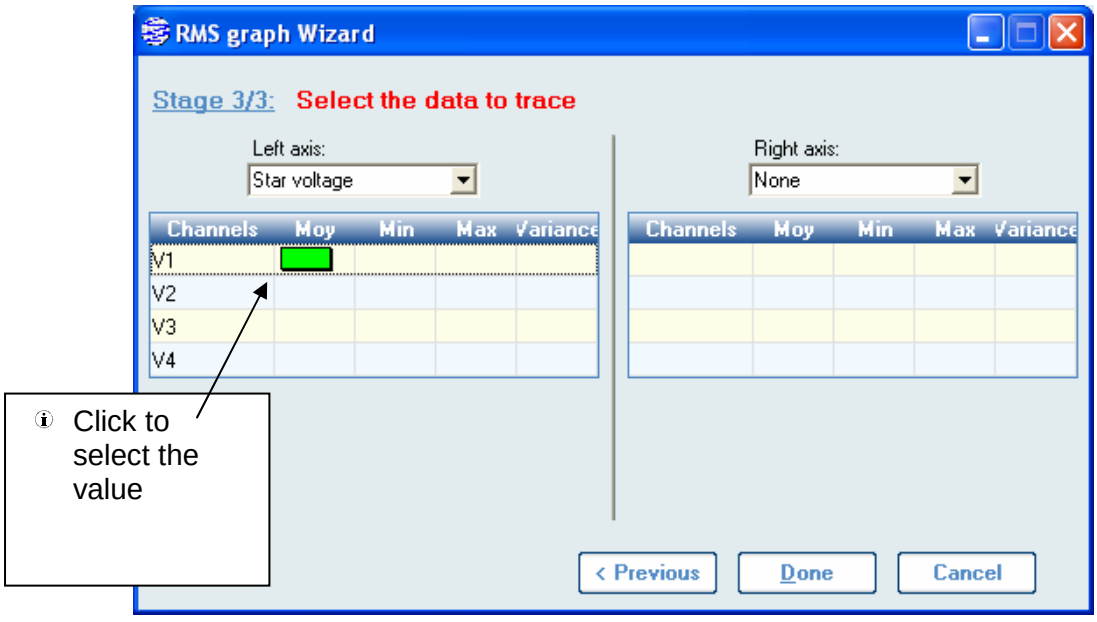
Several integration periods are available:

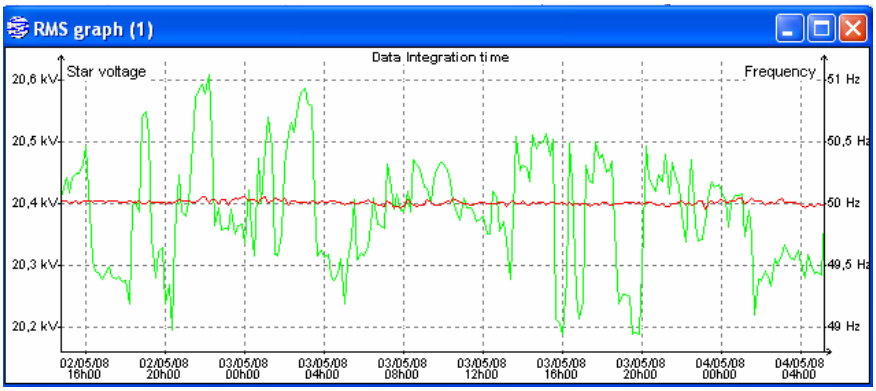
➔ Integration time:10 min is the default parameter, it's possible to set from 1 to 60 min
➔ 1 hour
➔ 24 hours
➔ 7 days.



☑ If the corresponding period was not downloaded no data will appear. Select an integration time after the download of the matching period.

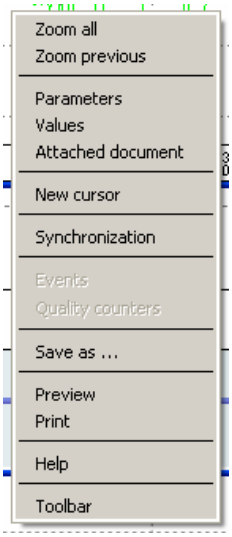
- Choose the data to display (axis, type of data and channel).



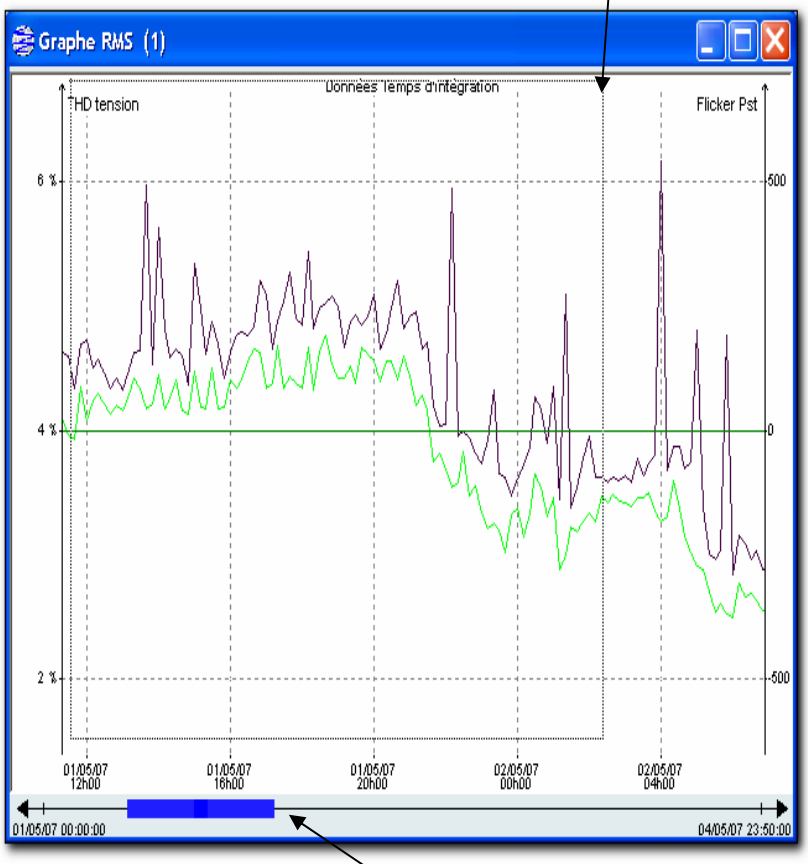


- It is possible to display on the same windows 2 different magnitudes

- With a right click it is possible to display a pop up menu with different option to modify the display or add different features (legend…)



- It is possible to use the lasso zoom.



- With the bottom cursor it is possible to change the time or to change the resolution

- It is possible to add as many windows for rms value as requested and the procedure will be shorter because the period had still been selected.

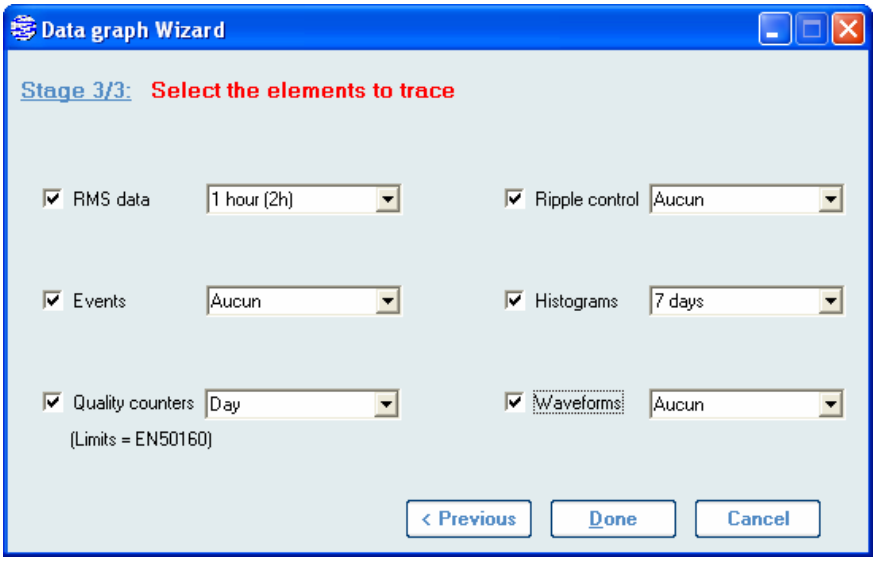
8.4. Graphical help to select the measurement

The mode ‘Data (Where, When)’ is a very interesting way to have an overview of what is in the data base. It will display on a time based graph all the type of data and show if the data is present or not

Choose the data

The different steps to displays the data from one or more measuring points are described below :

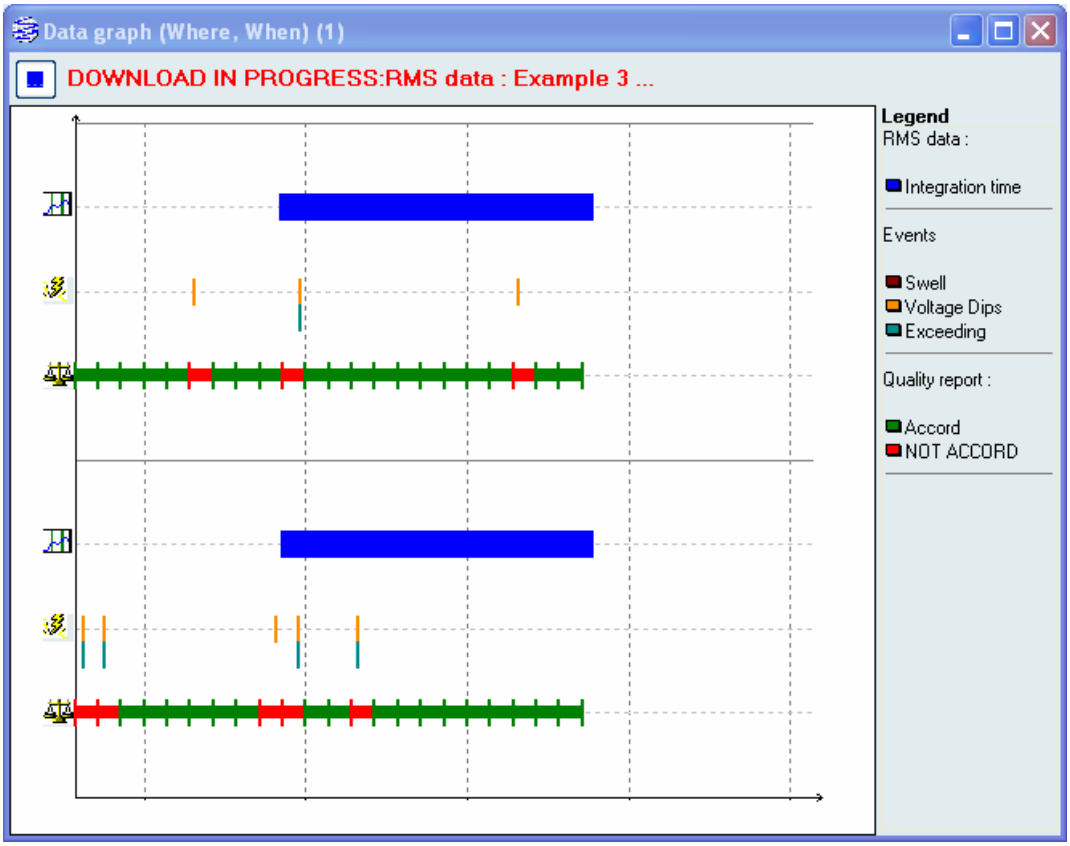
- In the Analysis menu choose *Data (where,when)* and follow the different steps :
- Select one measuring point or more.
- Choose a period of analysis
- Select at least one data type to display
- Choose the integration period and the eventual filters



A graphical display will show all the data from the different type and measuring points.

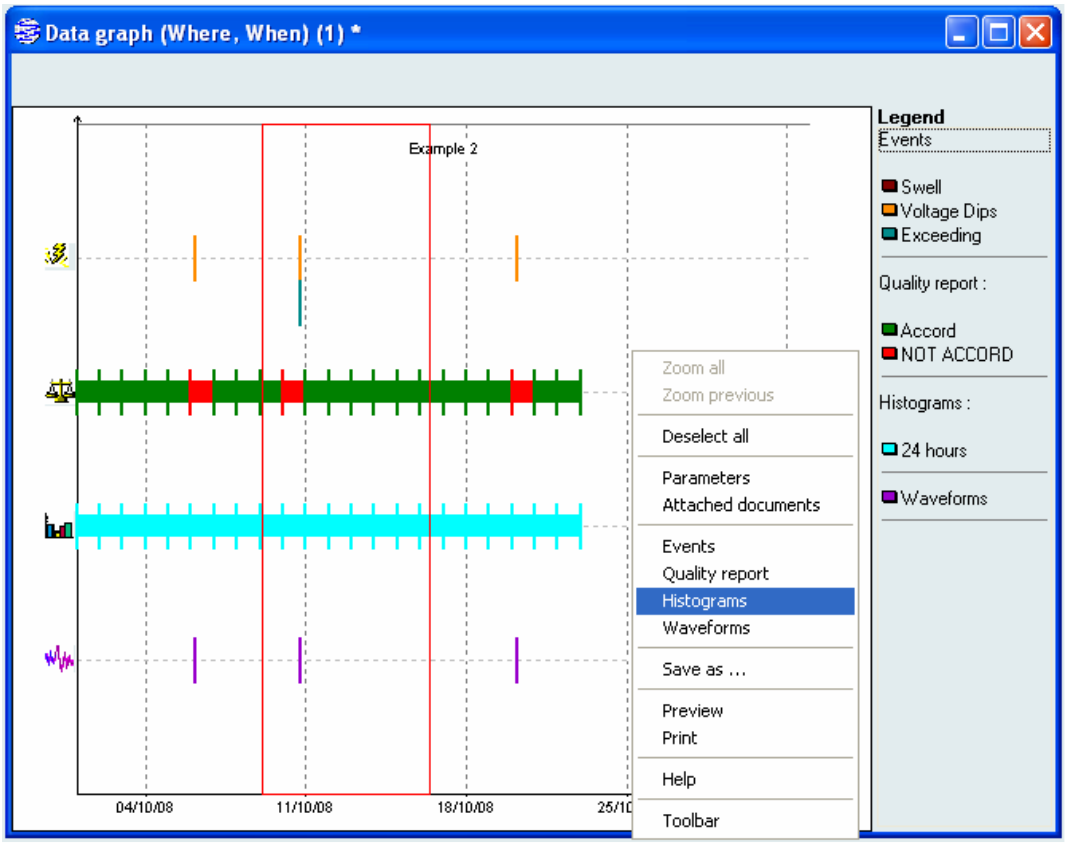
The quality reports which are not according the standards will be displayed in red.

All the type of data are displayed on one graph



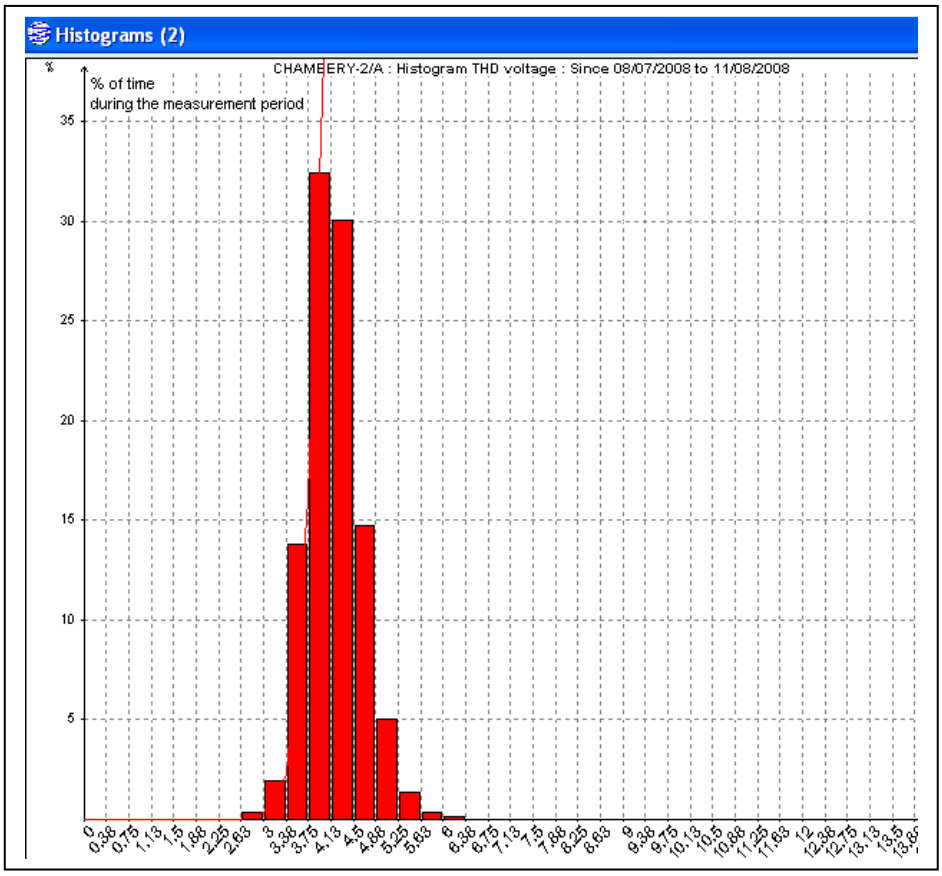
In order to display the data select them with a lasso and with a right click select the desired value in the pop up menu

Select the data to display with the lasso limits for requested period.

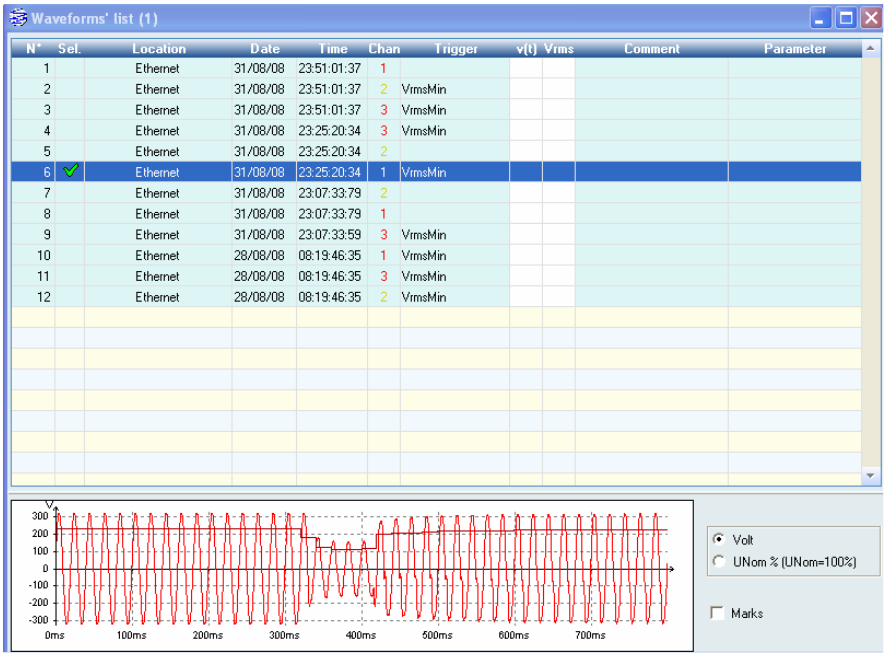


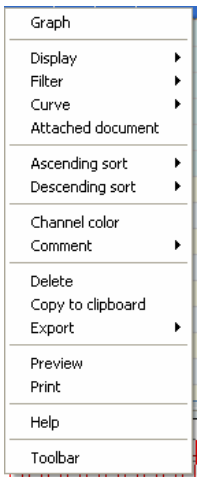
Select the data from the step by step menu and display the requested histogram

Display the histograms



Option : display the waveform





With the right click a pop up menu will appear in order to give some option for the display.

9 Transport and Storage

9.1. Transport

- Transport the device only in its original packaging.
- Keep the operating manual supplied with the device for future reference.
- Protect the device during transport against heat and moisture; do not exceed temperature range of -10 ℃ to + 50 ℃ and m ax. Humidity of 85 %.
- Protect the device against impacts and loads.

9.2. Storage

- Keep original packaging, as it might be required at a later stage for transport purposes or to return the device for repairs. Only the original packaging guarantees proper protection against mechanical impacts.
- Store the device in a dry room; the temperature range of -10℃ to + 50 ℃ and maximum humidity of 85 % may not be exceeded.
- Keep the operating manual supplied with the device for future reference.
- Protect the device against direct sunlight, heat, moisture and mechanical impacts.

10 Warranty

- The warranty period for faultless operation and compliance with the specified uncertainty of measurement is limited to 1 years from the date of purchase.
- The warranty is only valid if accompanied with the respective invoice or receipt of payment.
- Not covered by warranty are damages due to improper use, overload or operation under conditions that are outside the range of permitted ambient conditions.
- Warranty covers only technical data that is specified with a tolerance range. Values or limits for which there are no tolerances specified are intended for information purposes only.

11 Recalibration

- ALPES TECHNOLOGIES recommends recalibrating the device every 2 years. The device can be calibrated by the ALPES TECHNOLOGIES service department or any other calibration specialist. Refer to the *Calibration Application Note*.

12 Maintenance

- This device does not require a particular maintenance operation.

12.1. Internal items replacement

- Please ask the distributor to make the internal replacement.

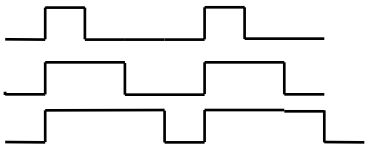
12.2. Status messages

Power Led : the led is green as the device is “On”. When the device is « Off » all the led are « off ».

Status Led : General status of the system.
Blinking green = measure one periodic system at 50Hz.
Blinking orange = memory is full – the recording of the events is desactived → **change the configuration of the events : the actual configuration shall not be ok.**

The led « Memo » is off when there is no recording.
When this le dis blinking, the sequence enables to know what is the recording status :

- 25% : the recording is schedulled.
- 50% : the ALPTEC2333B is recording
- 75%: the recording is finished.



The Led Memo is blinking red when the ALPTEC2333B is erasing the data.

Com Led :

The Led Com is blinking orange when the ALPTEC2333B is communicating through USB.

12.3. Battery replacement

☑ symptom : the device does not record anything when the supply is cut off.
Then the battery has to be replaced:

- Please ask the distributor to make the internal replacement.

Battery ref: SAFT Li Ion 8.4V 2S 1P VL18650

- **Alpes Technologies advice to change the battery every 2 years.**

- Do not throw the battery in the fire.

- **Please ask the distributor to make the internal replacement.**

☑ If the date and time of the device is not correct even after one setting of the hour :

☑ the lithium battery has to be replaced:
battery ref : Lithium 3 Volts, 130 mAh. (CR1632)
the internal clock is supposed to work 10 years without replacement.
Please ask the distributor to make the internal replacement.

The warranty shall not be applied if the batteries are from other ref than the indicated one.

12.4. Cleaning

Do not wash the device with water.
The device housing can be cleaned with an isopropanol-soaked rag.

13 Decommissioning and Disposal

13.1. Shutting down

- Shut off the power supply, Voltages and Currents circuits prior to connect the device.
- Never open the circuit of a current transformer. Always bridge the inputs of the current transformer before connecting or disconnecting the ALPTEC device.
- Never bridge the circuit of a voltage transformer.
- Remove all connected devices.
- Secure the unit against inadvertent switching on.
- Ensure that the operating manual is kept near the device.

13.2. Recycling and disposal

- Always adhere to the applicable statutory regulations for recycling and waste disposal.

Packaging

- The following licence agreements have been entered into for the disposal of the packaging: (France).

Housing

- Dimension : 340*295*152 mm
- Weight : 4,8 kg
- The electronic components including the power adapter, filter, plug-in modules and wires have a weight of approx. 2500 g and a volume of approx. 5000 cm3.

14 General technical data

EMC

Emission: Conform to the applicable levels.

Precision – Measurement methods

Recorded data:	**Average rms data.** **200 msec, 10 min, 1 h and 24 h intervals.**
Frequency:	**45-57,5Hz (60Hz option).** Resolution: **10 mHz.** Intrinsic error: **30 mHz.** **Class A following IEC-61000-4-30.**
Sampling frequency:	**10240 Hz synchronized with the network frequency (PLL).**
	Precision 10 cycles FFT (Fast Fourier Transform) – Bandwidth 30-2200 Hz.
Dips and Swells:	**RMS data on 1 cycle, sliding window of ½ cycle.** Reference voltage: **U nominal or average.** Intrinsic error: **<1% of U nominal.** **Class A following IEC-61000-4-30.**
Flicker :	**Pst (10 minutes), Plt (2 hours).** **Following IEC-61000-4-15.** Measurement range: **0-20.** Intrinsic error: **<5% of Unominal.** **Class A following IEC-61000-4-30.**
Voltage Harmonics:	Measurement range : **H2 – H51.** Recorded data: **200 msec, 10 min, 1 h, 24h.** **Following IEC-61000-4-7 Class I.** **Class A following IEC-61000-4-30.**
Current Harmonics:	Measurement range : **H2 – H51.** Recorded data: **200 msec, 10 min, 1 h, 24h.** **Following IEC-61000-4-7 Class I.** **Class A following IEC-61000-4-30.**
Unbalance:	**Class A following IEC-61000-4-30.**
Active Power:	**following IEC-61036 class 2.**
Reactive Power:	**following IEC-61268 class 2.**
Distortion Power:	**following IEC-61036 class 2.**

Standard references

EN 50160 "Voltage characteristics of electricity
supplied by public distribution systems"
UNIPEDE, 230.02 "Measurement guide for voltage characteristics, cat 1".

Standards Compliance

IEC 61000-4-30 "Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods"
IEC 61010-1 /2001 "Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements".
IEC 61000-4-6 "Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields."
IEC 61000-4-7 "Electromagnetic compatibility (EMC) - Part 4-7: Testing and measurement techniques - General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto".
IEC 61000-4-15 "Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 15: Flickermeter - Functional and design specifications".
IEC 61036 "Alternating current static watt-hour meters for active energy (classes 1 and 2)"

IEC 61268 “Alternating current static var-hour meters for reactive energy (classes 2 and 3)“
73/23/EEC EC Low Voltage Directive
89/336/EEC EMC Directive
See the “Type test” document for other standards compliance.

15 Definitions

CBEMA-Curve	In 1977 the Computer and Business Equipment Manufacturers Association provided an energy performance profile for computer equipment known as the CBEMA curve. Revised by the Information Technology Industry Council (ITIC) in 1996 it will continue to be referred to as the "CBEMA Curve". It is a necessary tool in determining the immunity limits in modern office electronic equipment. Voltage levels and durations at the equipment terminals, within the tolerance envelope, represent acceptable energy being Ledivered. http://www.itic.org/technical/iticurv.pdf
ITIC-Curve	See CBEMA-Curve
Coverage (statistics)	The percentage of available data compared to the expected available data for a selected period of time
Device	Any measurement equipment.
DISDIP	DISDIP was initially the name of workgroup of the UNIPEDE that has been working on a classification of dips, swells and interruptions. By extension, the name DISDIP has been given to tables that resulted from this workgroup.
Electrical variable	Any parameter that might be used to define the shape of an electrical signal. This might be a long or short-term phenomenon, affecting the wave shape or the RMS values. Ex: Harmonics, dips, flicker...
Event	An event is a short size information provided by a PQ device. Events are usually punctual (dip) but may coverover longer periods (EN50160 report event). Example: * A triggering condition was met (dip, flicker...) OR * A report was issued (EN report, Signaling voltages...) OR * Information from a device following an normal or abnormal behavior (reset, clock synchronization...) * Information provided by the software.
Histogram	An histogram is a graphical representation of the evolution of a parameter where time information is lost and focus is given on the statistical dispersion of the parameter.
Permanent recording	Unconditional/continuous (usually long term) temporal recording of a variable. The permanent recording is logged usually at a defined time interval (typically 10 minutes, one hour...)
Power Quality (PQ)	Any power problem manifested in voltage, current, or frequency deviation that results in failure or misoperation of end-user equipment.
Triggered recording	Recording that start and stop when triggering conditions are met. This type of recording is “finite” in time, contrary to the permanent (continuous) recordings (10-Min, statistics, User Recordings). Usually the triggering condition encountered when an electrical variable value overshoots of a threshold.
User	Is a person that will log on the system to use it. It is recommended to use dedicated log ins for each user and to allocate permissions according to the authority of each individual on the system. This enables traceability of all actions and provides security at the same time.

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